REMARKS

In the present paper, claim 7 has been amended and claim 18 has been added. Claims 2, 4, 5, 7-13 and 18 are presented for consideration by the Examiner in view of the following remarks.

The Present Application

The present application is directed to a method and apparatus for transmitting dedicated message information (such as a phone conversation) and simulcast message information (such as sports scores to a large number of subscribers) using a cellular transmission infrastructure. The invention permits simulcasting services and dedicated transmission services to be offered using the same wireless network. The technique conserves bandwidth as compared to existing cellular telephone systems that offer information services. In those existing systems, information messages are transmitted to a large number of individuals in separate, dedicated messages (see present specification, p. 3, lines 7-25). Using the system of the present invention, those messages can instead be simulcast in a single message.

The technique constructs frames that includes both simulcast message information and dedicated message information. The relative size and location of the time slots for those messages are established by control information at the beginning of the frames.

For example, amended claim 7 of the present application is directed to a method for use in a time division multiple access wireless communication system of simulcasting message information and transmitting dedicated message information from a plurality of proximately located base stations forming a cellular pattern over the same wireless frequency channel.

Frames are constructed for transmission by the plurality of base stations comprising control

information, simulcast message information and dedicated message information within

predetermined time slots of the frames. The simulcast message information represents the same

information transmitted by the plurality of base stations, and the dedicated message information

comprises information representing information intended for a single user. The simulcast

message information fills time slots having an extended cyclic extension time to mitigate channel

dispersion. The simulcast message information and the dedicated message information are

allocated to time slots of the same frame predetermined by the control information of the frame.

The simulcast message information time slot extension includes a guard time that

is approximately twenty-five or higher per cent as long as the simulcast message information.

The dedicated message information comprises a guard time of less than twenty-five per cent of

said dedicated information.

Thus, the frames constructed in the method of claim 7 contain two types of message

information: simulcast and dedicated. In addition, the frames contain control information. Each

type of information is placed in predetermined time slots.

Further, claim 7 requires specific guard time allocations between time slots for simulcast

information and time slots for dedicated information. Specifically:

> 1) For simulcast information, a guard time of <u>at least</u> 25% as long
> as the simulcast information.

> 2) For dedicated information, a guard time of <u>less than</u> 25% of the
> dedicated information.

Amended claim 2 further requires that the control information fills time slots at the

beginning of the frame, and that the control information be varied between predetermined time

slots within the frames such that immediately proximate base stations transmit control

information in different predetermined time slots.

The control information is therefore not simulcast, but is instead offset in time so that

immediately proximate base stations do not transmit control information in the same time slot.

The Examiner has rejected claims 2, 4, 5 and 7-13 under 35 U.S.C. §103 as obvious over

U.S. Patent No. 5,485,463 to Godoroja et al. ("Godoroja "), in view of U.S. Patent No. 6,802,044

to Baum ("Baum").

The Godoroja *Patent*

Godoroja discloses a system for transmitting multiple, individual paging messages to

individual subscribers. As shown in FIG. 6, an example data sequence contains a simulcast slot

100 and three slots 110, 112, 114 containing message data. As noted by the examiner, the

simulcast slot 100 comprises control information (items 104, 106, 108).

Information from the simulcast slot is used by the paging devices to determine whether a

message is waiting and, if so, in which time slot it will be delivered (Godoroja, col. 6, line 62 –

col. 7, line 39). The message is then delivered in one of the time slots 110, 112, 114 (col. 7, lines

40-56). The message is delivered in the assigned time slot by the base station in the paging

unit's cell. Base stations in adjoining cells with overlapping radio frequency coverage do not

transmit at the same time (col. 4, lines 53-60). The messages in the time slots 110, 112, 114 are

therefore NOT simulcast, but are instead transmitted by a single base station in an assigned time

slot.

The Baum *Patent*

Baum discloses a symbol timing synchronization system for use in the reverse link of a

cellular communication system (Baum, Abstract). Baum teaches the use of symbol timing

synchronization to mitigate the effect of misalignments caused by propagation delays which, in

turn, are the result of potentially large and varying distances between the subscriber units and the

base station (col. 12, lines 6-39). Baum explicitly discourages the use of cyclic extensions (or

guard times) for that purpose.

Discussion

Claim 7: The Claimed Simulcast Information is <u>Message</u> Information

Claim 7 has been amended to make clear that the simulcast information contained in the

frames is <u>message</u> information. The Examiner has rejected claim 7 based, in part, on the

simulcast information disclosed in Godoroja. Applicant submits that neither Godoroja nor Baum

teaches the limitations of that claim.

Specifically, Godoroja does not teach "simulcast message information" as required by

amended claim 7. Instead, only two types of information are placed in the frames: the simulcast

information placed in slot 100, which is control information (NOT message information), and the

message information placed in slots 110, 112, 114, which is specifically taught by Godoroja

NOT to be simulcast (Godoroja, col. 4, lines 53-60). Nowhere in Godoroja is taught placing

simulcast message information in the frame. In sharp contrast, the inventors of the present

application recognized the advantages of simulcasting mass-consumed message information in a

cellular network instead of the inefficient use of dedicated channels, as is done today

(specification, p. 3, lines 7-25; p.4, lines 12-18)

For that reason, Applicants respectfully submit that the limitations of amended claim 7

are neither taught nor suggested by the art of record, and that that claim is therefore in condition

for allowance. Applicants further submit that claims 2, 4, 5, 8-13 and 18, which depend directly

or indirectly on claim 7, are patentable for at least the same reason.

Claim 7: Baum Teaches Away from Guard Times and Does Not Teach the Claimed Specific

       Guard Times of Less Than and Greater Than 25 Percent

The Examiner states that Baum discloses mitigating greater channel dispersion by using

larger cyclic extensions (guard times). Applicants respectfully submit that Baum instead teaches

adjusting symbol timing references to mitigate the channel dispersion problem (col. 12, lines 31-

39), and explicitly teaches away from the use of cyclic extensions:

> While it is possible through the use of large cyclic
> extensions to mitigate the effect of such delays, this is not desirable
> in many cases because the use of a longer cyclic extension will
> result in reduced system bandwidth efficiency. The present
> invention provides, for a multicarrier communication system, a
> method for adjusting the symbol timing reference of each
> subscriber unit such that the reverse link signals from different
> subscriber units arrive at the base unit with the same symbol
> timing.

(Baum, col. 12, lines 27-35).

Claim 7 further requires specific guard time durations of at least 25% for the simulcast

information and less than 25% for the dedicated information. Baum discloses no specific

durations of guard times as percentages of dedicated information and simulcast information.

Instead, Baum discourages the use of guard times, and certainly does not suggest guard time

percentages. In rejecting claim 7, the Examiner points to no passage teaching that limitation in

any of the cited art , and the Applicants respectfully submit that none exists.

Applicants therefore submit that claims 2, 4, 5, 7-13 and 18 are patentable for that

additional reason.

Claim 2

Applicants respectfully submit that claim 2 is patentable for the additional reason that

Godoroja does not teach control information meeting both of the following two limitations:

> 1. The control information fills time slots at the beginning of the
>
> frame, and
>
> 2. The control information is in predetermined time slots within
>
> the frames such that immediately proximate base stations transmit control
>
> information in different predetermined time slots.

The Examiner has identified the information represented by elements 117, 118 of FIG. 6

as being control information transmitted in different time slots. That information, however, does

not fill time slots at the beginning of the frame, as also required by claim 2. On the other hand,

the information represented by elements 104, 106, 108 of FIG. 6, also identified by the Examiner

as control information, is simulcast and therefore does not meet the second limitation. Godoroja

does not teach any control information that both resides "at the beginning of the frame" and is

"varied between predetermined time slots within the frames such that immediately proximate

base stations transmit control information in different predetermined time slots."

Applicants therefore respectfully submit that claim 2 is patentable over the cited art for that additional reason.

Claim 18

New claim 18 requires that the three types of information in claim 7 (control information, simulcast message information and dedicated message information) are in <u>separate</u> time slots of the frame. Godoroja does not teach placing three types of information in separate time slots. Instead, Godojora teaches placing simulcast information (not simulcast message information) and control information in the <u>same</u> slot. For that additional reason, applicants submit that claim 18 is in condition for allowance.
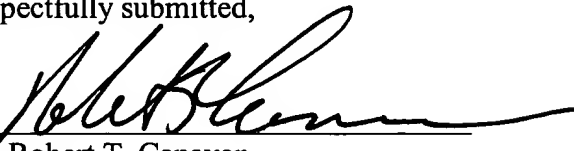
Conclusion

Applicants therefore respectfully assert that claims 2, 4, 5, 7-13 and 18 are now in condition for allowance, and earnestly request that the Examiner issue a Notice of Allowance.

Should the Examiner have any questions regarding the present case, the Examiner should

not hesitate in contacting the undersigned at the number provided below.

Respectfully submitted,

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